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THE NEW YORK
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☞ See Advertisement on last page.


## POETRY.

### THE ILLS WE LEAVE BEHIND US.

Oh ! what's the use of looking back,
As o'er life's road we travel;
Or pausing for a moment to
Some mystery unravel,
The better way's to go ahead—
Let Fortune miss or find us,
And never cast a glance upon
The ills we leave behind us.

When sickness and sore toes combine
To make us sad and weary,
We ought to keep our spirits up,
Nor think that life is dreary;
But cast at once from off our souls
The chains of grief that bind us,
And bid a last farewell unto
The ills we leave behind us.

This world hath pleasure for us all,
As well as care and sorrow,
And though the skies may weep to-day,
They may wipe up to-morrow.
Then why should we let present woes
Of former ones remind us ?
They're past— they're gone—so let's forget
The ills we leave behind us.

Then let Old Time remove the stones
Where all our griefs are covered,
And frighten Memory's bird away,
Which o'er them long has hovered;
For when within his fatal net
Grim death has once entwined us,
We'll cease to think of present joys
And ills we leave behind us.

### A NIGHT THOUGHT.

Thou must go forth alone, my soul !
Thou must go forth alone—
To other scenes, to other worlds,
That mortal hath not known,
Thou must go forth alone, my soul,—
To tread the narrow vale;
But He, whose word is sure, hath said
His comforts shall not fail.

Thou must go forth alone, my soul,
Along the darksome way;
Where the bright sun has never shed
His warm and gladsome ray,
And yet the Sun of Righteousness
Shall rise amidst the gloom,
And scatter from thy trembling gaze
The shadows of the tomb.

Thou must go forth alone, my soul !
To meet thy God above;
But shrink not—He has said, my soul !
*He is a God of Love.*
His rod and staff shall comfort thee
Across the dreary road,
Till thou shalt join the blessed ones
In Heaven's serene abode.

### Gentle Words.

It is not much the world can give,
With all its subtle art,
And gold or jems are not the things
To satisfy the heart,

But oh ! if those who cluster round
The altar and the hearth,
Have gentle words and loving smiles,
How beautiful is earth !

## BISHOP'S HYDRAULIC ENGINE.

FIG. 1. FIG. 2.

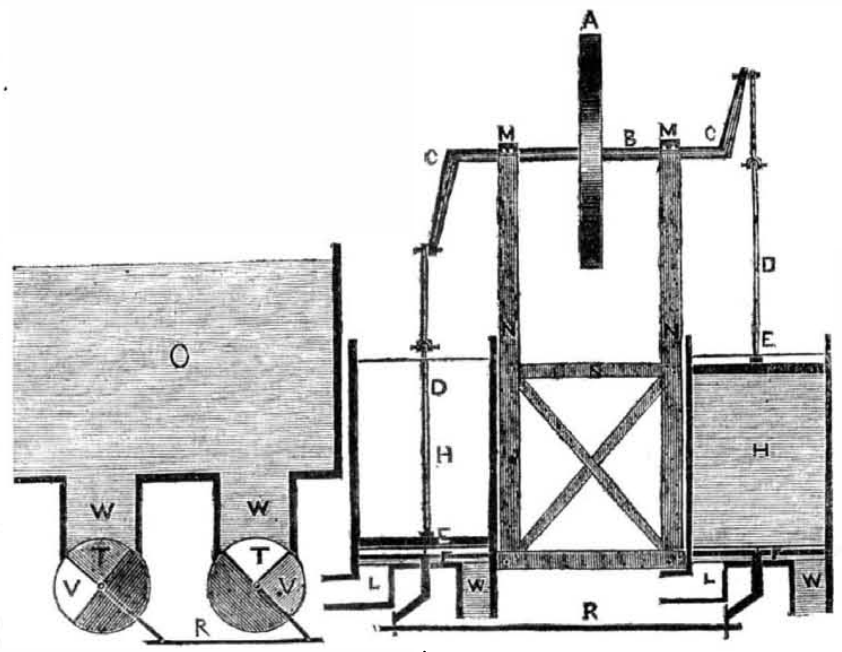


FIG. 1—CONDUIT —O, Fountain head. W W, pipes from fountain to bottom of cistern. V T, triangular openings to let water out of cylinders T V, openings to let water in. R, connected rod to levers which turns the openings to admit and discharge the water. The centre of the disc is a point on which the disc turns to keep it from pressing up or down.

FIG. 2—ENGINE.—A, belt wheel on shaft. B, shaft. C, cranks D D, piston rods. E E, plungers. F F, cut-off discs to let water in and out of cylinder. The two pitmans are not lettered. R, connecting rod of levers to turn the disc valves. H H, cylinders of engine. N N N, frame work of engine.—M M, coupling boxes. W W, water pipes to supply cylinders. L L, pipes where water is discharged.

DESCRIPTION.—From a foreboy two cast iron pipes conduct the water into the cylinders through an opening in the bottom of the cylinder of one fourth the size of the bottom.—There is another opening to be made of another fourth of the bottom to let the water escape, separated from the quarter section to let the water in by a small bar in the bottom.—There is a circular disc with a rim fitting tight on the bottom of the cylinder to prevent leaks. Through this disc is an opening one fourth its size, or the quarter section. In the centre on the upper side of the disc is a point or pivot, resting against a strong bar across the cylinder to keep the disc down when the water is shut out of the cylinder. Attached to the lower side of the disc in the centre is a shaft and lever, by which the discs are turned one fourth round. Two cast iron cylinders with plungers fitting nicely water tight to play up and down, and attached to the piston heads are the piston rods without packing boxes. Two pitmans connect the piston rods to cranks on each end of the shaft opposite to each other.

OPERATION.—The water is let into the pipe and flows up through the bottom of the cylinder and through the opening in the disc directly over it. The water presses against the piston head and forces it up while the other descends. At the instant the other piston head reaches its lowest point, by a cam the two circular discs are turned one fourth round, so as to bring the opening in the disc opposite to the one in the bottom to let the water out of the cylinder, which is full of water, shutting the water off at the same time ; reversing it in the other cylinder, closing the outlet and opening the inlet so as to let the water flow in as the other flows out. The rising and falling of the piston turns the shaft and gives motion to the machinery. The maximum motion of the pistons would be three feet per second.

The above is a representation and description of a Hydraulic Engine invented by Mr. E. Bishop, of Jamestown, Saratoga Co, N. Y. an excellent millwright, and a gentleman of much experience. We cannot see why the machine should not operate well and be very economical. The principle is correct, that according to the weight of water there will undoubtedly be exercised the respective forces of 100 or 1000 pounds, &c. There can be no doubt but practice would suggest many improvements, but the idea is excellent and for safety and economy its utility is self apparent.

### It's all a Mistake.

A gentleman, passenger by a steamer, having missed his pocket handkerchief, suspected an ugly looking character that was near him, whom he charged with the theft, which the other, who was an Irishman, indignantly repudiated. After some time, the gentleman finding the missing handkerchief in his hat, apologised to the Irishman for the unintentional insult he had offered him; upon which Paddy, with characteristic *naivette*, replied, "Oh! don't be after making an apology.—it's all a mistake. You tuk me to be a thief, and I tuk you to be a gentleman."

An Irishman once passing through Utica on a very dark night, characteristically made the remark, " one thing is very clear, this town is very dark."

**One of the latest discovered curiosities is a piece of real meat from a Bologna sausage.**

### Peculiarities.

Various men have various ways of letting people know when they are disturbed in mind, and Gen. Taylor, it seems, has his peculiarity too, in this respect. An officer in attendance at the time, states that after reading the letter which he received while at the supper table, from Gen. Scott, " informing him that he was going to lose his regular troops, old Rough and Ready crumpled the sheet on which it was written very much in his hands, laid it aside, and then commenced in a furious manner putting mustard over his meat, potatoes and bread, into his coffee, and on every thing that was around his plate."

A boy in Jamaica was driving a mule, the animal was sullen, stopped, turned his arched neck upon the boy, as if in defiance and contempt.. " Won't go will you ? feel grand do you ? I guess you forget your father was a jackass."

### LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

*For the week ending June 19th*, 1847.

To Samuel B. Sexton, of Baltimore, Md. for improvement in Air-tight Stoves. Patented June 19, 1847.

To John Elgar, of Baltimore, Md., for improvement in machines for cutting Corn Fodder. Patented June 19, 1847.

To Joel L. Hoyt, of Port Jervis, N. Y., for improvement in Shaft Tugs for Harness. Patented June 19, 1847.

To Charles Louis Fleischmann of Washington, D. C., for improvement in Cotton Wadding. Patented June 19, 1847,

To Anthony Shermer, of Philadelphia, Pa., for improvement in apparatus for Steering Vessels. Patented June 19, 1847.

To James A. Cutting and Geo. Butterfield, of Boston, Mass., for improvement in Spark Arresters. Patented June 19, 1847.

To Ureli C. Hill and Charles F. Hill, of New York, for improvement in Musical Instruments. Patented June 19, 1847.

To Lewis C. England, of New York, for improvement in Tanning Morocco. Patented June 19, 1847.

To Abel B. Buell, of Westmoreland, N. Y., for improvement in Harness Buckles, Patented June 19, 1847.

To Addison Smith, of Perrysberg, Ohio, for improvement in Measuring Cloth, &c, Patented June 19, 1847.

To James Walker, of Belle Fountain, Ohio, for improvement in Ploughs. Patented June 19, 1847.

To William Lewis, of Edgefield Court House S. C. for improvement in Straw Cutters. Patented June 19, 1847.

To Cornelius H. Preston, of New York, for improvement in forming Bricks. Patented June 19, 1847.

DESIGNS.

To Michael Gibney, of New York, for designs for Spoons and Forks. Patented June 19, 1847.

RE-ISSUES.

To William Hovey, of Worcester, Mass., for improvement in machinery for grinding Tools. Patented Sept. 23, 1845. Re-issued June 19, 1847.

### Bragging.

We love to hear a couple of chaps get together that understand it, and brag hard about what they can do. It's what Sam Slick calls "human natur," and we can't study it too much. Here is about as cute a specimen of bragging, which resulted in the nonplus of one of the parties, as we have heard of late.

Mr. Smith.—I understand, Mr. Jones, that you can turn anything neater than any man in this town.

Mr Jones.—Yes Mr. Jones, I said so.

Mr. Smith.—Well, Mr. Jones, I dont like to brag, but there is not the live man on earth that can turn a thing as well as I can whittle it.

Mr. Jones.—Poh, nonsense, Mr. Smith talk about your whittling; what can you whittle as well as I can turn it ?

Mr. Smith.—Any thing, every thing. Mr. Jones, just name the article that I can't whittle better than you can turn, and I will give you a V if I don't do it to the satisfaction of all these gentlemen present.

Mr. Jones.—Well, Mr. Smith, suppose we take two grindstones, just for trial, you may whittle and I will turn.

Mr. Smith slid.

### Wisdom and Happiness.

There is this difference between happiness and wisdom—he that thinks himself the happiest man is really so; but he that thinks himself the wisest is generally the greatest fool.

**Law is like an eel trap, very easy to get in but very difficult to get out.**

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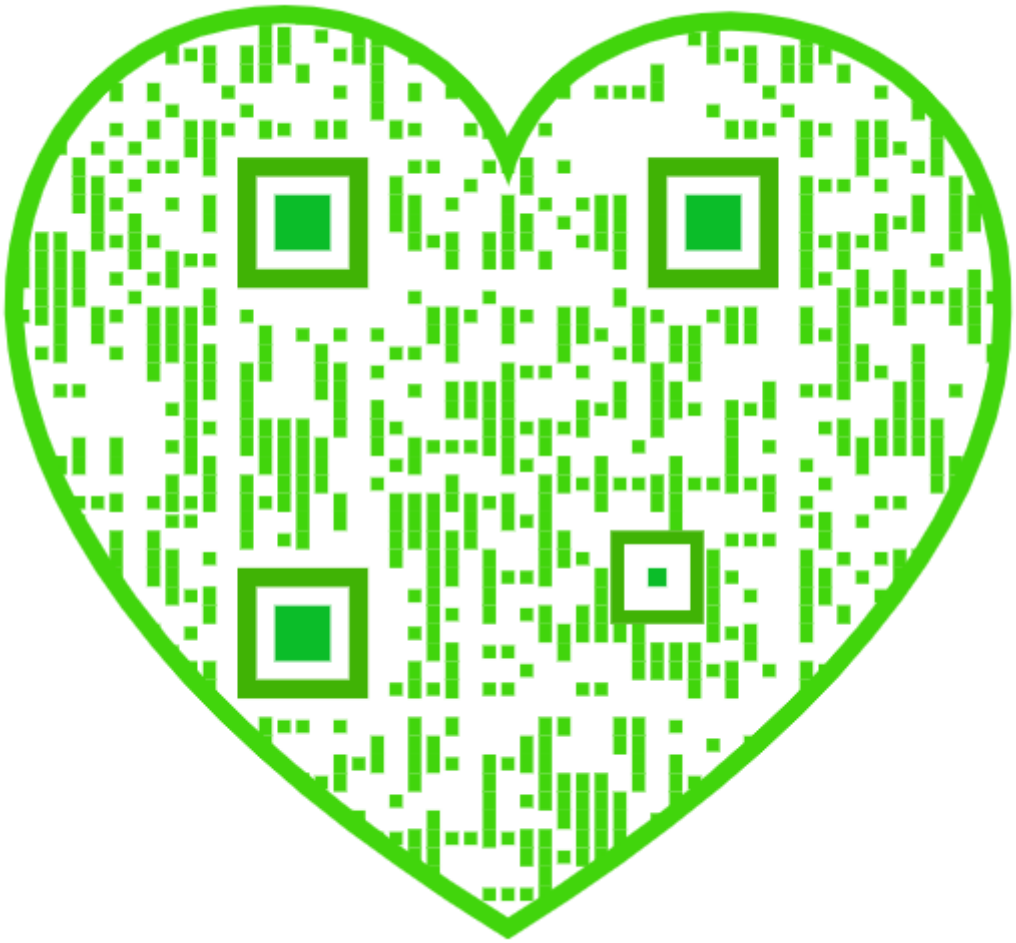

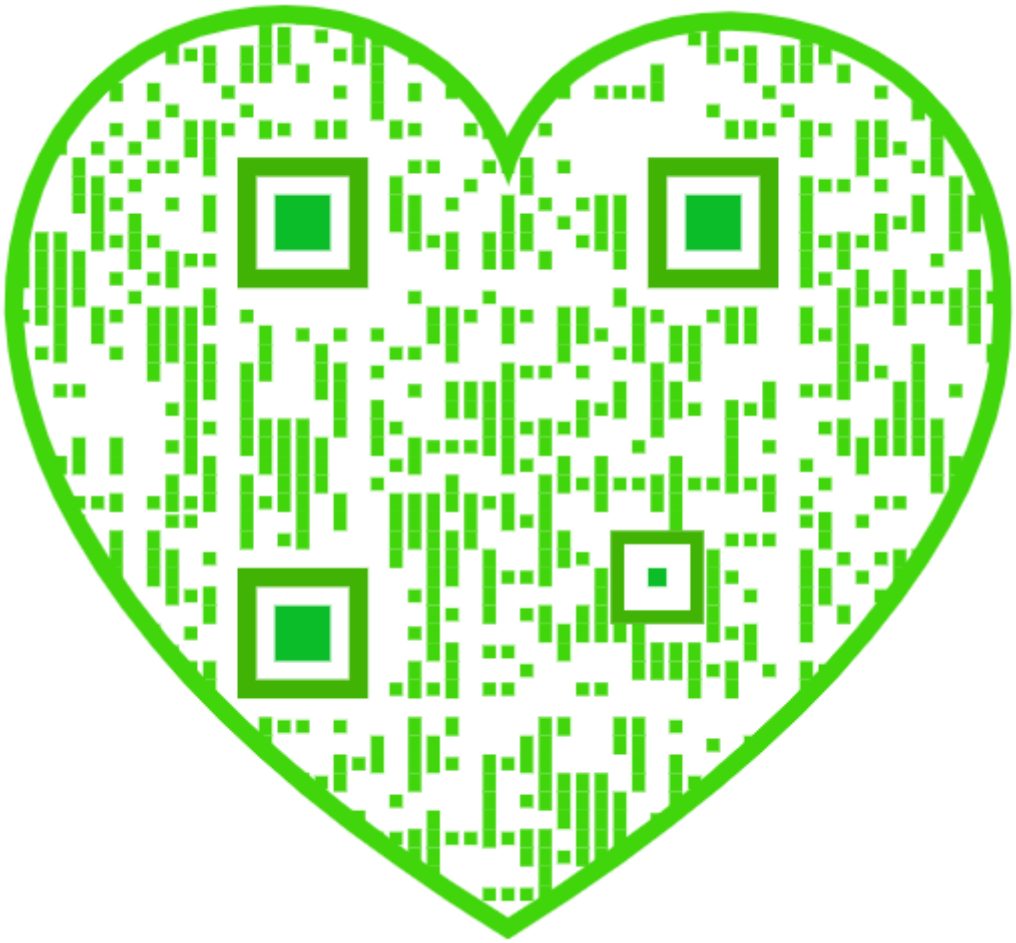

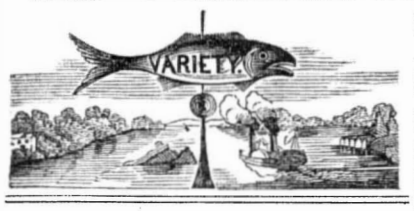


### Durable Water Pipes.

Pipes made of a certain kind of hydraulic cement are manufactured by Mr. G. Ball of this City, which possess the property of becoming hard as stone. The cement pipes are made by being cased with tin, which soon decays in the ground, but by that time the cement has become like marble. Such pipes are valuable for conducting water under ground, and should entirely supersede lead pipe, which combines in small portions with some waters and exerts a deleterious influence on the health of those who make use of them. We have often thought that glass or pottery ware pipes might be successfully made for water conduits,—they would also be impervious to climate and time, and might be easily moulded and made strong enough for all common purposes.

### Rosin or Pitch Pavements.

In last week's paper, there was an account of rosin being used for pavements in Fayetteville, N. C. It may not be generally known we believe, that a mixture of the oil of vitriol and pitch or rosin, makes a very hard substance, something like as it were elastic charcoal. The action of the acid upon this combustible substance, has nearly the same effect as fire upon coal or wood by charring in pits. The pitch is carbonized by the acid, while at the same time it has an elasticity different from coal, by retaining something of its glutinous qualities, though it becomes as hard as stone.

### Fires.

Last week the Hall occupied by the Mechanics Mutual No. 1. at Lockport. The building was much injured—cause of fire unknown.

Last Saturday a large building in Harvard street, Boston, occupied by A. Emerson & Co. paper manufacturers, was destroyed by fire—damage about $5000.

A large fire occurred at Columbus, Ga., on the 6th inst. Loss about $16,000. Mr. Goetches was the heaviest sufferer.

A destructive fire occurred at Nashville, Tenn., on the 6th, destroying fifteen or sixteen buildings.

The last foreign arrival brings the news of a most destructive fire at Bucharest, in Turkey, by which property to the amount of $10,000,000 was destroyed.

### Steam Boat Burnt.

The Steam Boat Revenue was destroyed on Friday the 11th, at Chilicothe on the Illinois river. Col. Dement, of Dixon, was on board at the time as a passenger. He lost a gold watch and other property of the value of $300. There were some fifteen other passengers on board, all of whom escaped.

### Unruly Locomotive.

The editor of the Atalanta (Geo,) Luminary has been informed by a gentleman acquainted with the circumstance that a new and splendid locomotive named Gen. Taylor, tried on a railroad in Georgia, *would not back!*

### A New Speculation.

The English have discovered a new object for importation. The natives of Australia have magnificent teeth, which they are willing to part with for mere trifles, as handkerchiefs, knives, or other things of like value. An English merchant in Australia, has entered largely into this speculation, having sent several boxes of human teeth to London, where they have been eagerly bought up by the dentists.

### Stomachics.

One of the best stomachics known, is equal portions of magnesia, ginger and Turkey rhubarb, ground and mixed together, and taken in cold water. A teaspoon full is about a right quantity for one powder. Those who are affected with gas on the stomach will find this a simple and excellent remedy. Magnesia, is also an excellent remedy for those who are troubled with an excess of acid on the stomach.

### Ventilation.

In Granger's lectures the following beneficial effects are inscribed to ventilation: "This pump (Dr. Arnott's double acting air pump) was used on board the Anson, formerly a seventy four gunship which last year carried out to Australia, 500 convicts—a larger number than the government had ever before ventured to send in one vessel. There were in addition 300 troops and the crew—in all about one thousand persons. The apparatus was worked by one lad; and it was reported that about three times more air was driven in than by the four wheel ventilator commonly used, and which required eight men to work it.—Only one person and that an old epileptic died on the passage. All the others enjoyed singular health during the voyage and it was remarked when they were landed they that had fresh complexions very unlike what was observed in ordinary cases.

### Troy

This city is growing rapidly in spirit and importance. The ground is being broken nearly every day for the erection of new buildings, and the extension of those already constructed.

Messrs. Atwood & Co. are rebuilding and enlarging their extensive machine shop.

Messrs. Johnson & Cox are extending their workshops right and left of the main building.

The Troy Rolling Co. (formerly the Vulcan Co.) have more than doubled the dimensions of their building; and we learn it is their intention to commence operations in a few days or as soon as sufficient working stock can be procured.

A little farther down, but within the limits of the city, other works of the same description, under the superintendance of the Troy and Albany Co., are being built and will be put in operation this season. This will enable them to more than double their business.

### A Relic.

The editor of the New Haven Journal says that he has in his possession a snuff-box which was brought to this country by one of our Puritanic ancestors, in the original ship—the Mayflower. It is made of steel, japanned, of a circular form, and is as well preserved for use as the most modern articles of the present day. It is the property of an old lady in Fairfield county now nearly ninety years of age, of the name of Comstock, and has descended in the family, through all its generations, from the landing at Plymouth of its first possessor. The old lady has several other relics of the same description, and among them an iron pot which has been in use more than two hundred years.

### Convention at Chicago.

A convention of delegates from the Lake region and the valley of the Mississippi, will be held at Chicago, on the 5th of July, to adopt such means as may be necessary to secure the further improvement of the harbors on the lakes. Buffalo, St Louis, Pittsburg &c. have appointed delegates.

### The Crops.

The weather has been very unfavorable this season, says the Red River Republican of the 22d ult. for our planters, it being cold and dry. The cotton crop, particularly, looks very unpropitious, being more or less withered and stunted.

### Lake Superior Copper.

The Ore in this region yields on an average 21.10, or double that of the Cornwall mines, There are now 100 companies organized to carry on the mining operation in the Superior region. Last year there were imported into the United States $2,239,373 of copper. The mineral wealth of Lake Superior is not by any means well known, but there can be no doubt of its rising importance.

### Atmospheric Railway.

The Atmospheric Railway at Croyden, England, was abandoned on the 8th of May last. This scheme had not we believe a fair trial. We should like every new scheme to get a fair trial before it is abandoned.

### Lady Legislators.

Two ladies are members of the Prussian Diet. and have the right to take their seats and vote among the nobles. They modestly vote, however, by proxy.

## RAILROAD NEWS.

### Albany and Schenetady Rail Road.

At an election held on the 9th inst., at Albany, for Directors of the Albany and Schenectady Rail Road Company, the following gentlemen were elected viz: John T. Norton, Edward C. Delavan, Watts Sherman, Rufus H. King, Henry H. Martin, Augustus James, Herman Pumpelly, Isaac Newton, and G. Y. Lansing; it was considered inexpedient to declare a dividend at the present time.

### Central Railroad.

We learn from a reliable source that the Directors of the Central Rail Road Company have definitively settled upon New-Buffalo as the Western terminus. The route West from Kalamazoo will be by Niles.

### The Long Island Railroad Company.

This Company has concluded an arrangement with the Jamaica Company, which is considered a favorable one for the former. The rent formerly paid to the Jamaica Company by the Long Island Company, for the use of the road between Brooklyn and Jamaica, was $32,300 per annum.

### A Rail Road Convention.

A Rail Road Convention will be held at Hillsboro', Miss., on the 14th July, to take into consideration the completion of the great Southern Rail Road from Vicksburgh, on the Msssissippi, to the Atlantic, north of the Gulf of Mexico.

### Pittsburgh and Connelsville Rail Road.

In the counties of Fayette and Westmorland $100,000 have been subscribed. The Pittsburghers are confident of raising $250,000 between that place and Connelsville.

### Rutland and Whitehall Rail Road.

Surveys are making of this road, which is to connect the great line of rail road from Boston to Buffalo, by the way of Saratoga Springs. These surveys are said to be very favorable.

### Important Rail Road Movements.

The Nashville Banner of Saturday week says:—

We are informed that, on Friday evening, the corporate authorities of Nashville passed an act on its first reading, providing for the taking of the stock in the Nashville and Chattanooga rail road, to the amount of $1,000,000

### Alexander Pope.

When very young, was introduced as a maker of verses to Dryden, who gave him a shilling for the version of the Pyramus and Thisbe. He wrote his ode on music at the desire and instigation of Steele, who used to prefer it to Dryden's. It was set to music by Dr. Green.

### Locomotive on a Highway.

We perceive that an experiment has been made in France with a peculiar kind of Locomotive, to run on the highways. This is not a new invention, Steam Coaches ran for a short time on some of the roads in Scotland, in 1843, but a great explosion put an end to the scheme.

### Magnetic Telegraph.

F. O. J. Smith, Esq. is now in Portland, Me., making arrangements to have the Telegraph opened from Boston, in the course of a week. It will be so arranged that, if requested, a message may be sent through to New York direct.

### Compensation for Mob-Law.

The Philadelphia County Commissioners have ordered the payment of $47,940—being the full amount of the final award for the destruction of the famous Abolition Hall, Philadelphia, by a mob some six years ago.

### American Iron.

The Danvile, Pa., furnaces are doing bravely. One, belonging to the Montour company, of only nine feet boshes, turned out, week before last, 79 tons, and last week 82 tons, of good iron—a yield said to exceed any thing on record, either in Europe or America. In a very short time, they will be able, it is said to manufacture over 400 tons per week.

### British Coining.

The English Mint has 8 presses, which strike 60 blows per minute and produce 3900 coins per hour. Good steel dies supply 300,000 or 400,000 impressions. The mint was established in the 18th year of the reign of Edward II.

### Davison's Hot Air Furnace.

We have examined this furnace, an advertisement which will be found on another page and have no hesitation in saying, that it is the best furnace that we have ever seen. It possesses the quality of consuming more of the coal-gas than any other furnace and also a more economical radiating surface, or rather surfaces, for there are three of them The grand desideratum of a hot air *furnace*, is the quality of consuming most economically and to good purpose the fuel, and having the greatest power of radiation—this furnace is constructed philosophically upon these principles.

### Important for Sailing Vessels.

A gentleman in Glasgow, Scotland, suggests a ready method to prevent ships from being consumed by fire. The plan is simply that every vessel should carry at the bottom of her hold, as ballast, a quantity of chalk, with which one or two metalic tubes should communicate. In the event of fire in the vessel's hold, by pouring diluted sulphuric acid through the tubes, such a quantity of carbonic acid gas would be generated as would effectually put out the flames.

### Improved Mode of Smoking Hams.

We understand that Robert Hilson, of Albany, has invented a mode of smoking hams, fish, &c., in a vacuum by means of three or more cylinders with connecting pipes and stop cock, an air pump and portable air tight furnace attached to the same. We shall be able shortly to give a cut of it with a description. It would be invaluable for the Western States.

### Improvement in the Magnet's Power.

Messrs. Jas Gould and Eugene Packard, of Albany, have by repeated experiments in the shape of common magnets, produced a rotary motion, which promises to be of great utility as an economic of machine power.

### A Sad Event, if True.

It was stated a few days since that the bark Junius was on shore on West Hampton Beach, L. I., and that the second mate was drowned in trying to effect a landing from the ship to the shore. It appears that the Captain endeavored to make two ports, but was forbidden to enter for fear that the passengers were in an unhealthy condition with the ship fever or some other contagious disease. He spoke two pilots who refused to come aboard, and, consequently, he ran his vessel on the beach.

### Ethiopia changing her Color.

The extraordinary fact of a black woman turning white has recently occurred in Cairo.—The woman is married to a black soldier belonging to Ibrahim Pacha's guard, and, according to the evidence brought forward, it is during the last two years that her black skin has peeled off by degrees and without any inconvenience to herself, and has been replaced by a white skin.

### Post Office Stamps.

The Post Master General has contracted with Rawdon, Wright & Hatch, the engravers of this city to furnish stamps for the department. The ten cent stamps will be printed in black, representing the head of Washington, the other, for five cents, printed in brown, representing the head of Franklin.

### Robbery.

The St. Lawrence and Atlantic Railroad Office at Montreal, was robbed on Monday morning, by W. Lewis, the Porter, of about £70. Information was immediately given to the Police, when Sub-Chief Jereme went in search and overtook him on the way to the States, through the Chambly road. £43 was found on him; the balance is supposed to have been lost.

### Laborers Wanted.

One thousand laborers are advertised for upon the line of the Central Railroad, in Vermont, between Bellows Falls and Mount Holly, the work to last two years. The pay offered is $1 per day.

### A Great Fire.

By way of Panama we learn that an extensive fire took place in Callao, on the night of the 31st of March, and between $50,000 and $70,000 worth of goods destroyed.

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For the Scientific American.

## NEVER DESPAIR.

BY ROBERT MACFARLANE.

As shadows and darknesss come up from behind,
Sweet hopes of the future flit over the mind,
In visions of beauty to kindle the sou
As silver waves softly o'er golden sands roll.

When troubled with sorrow, with grief and with care, [pair,"
The voice that's within me, says " never des-
Life's woes are a moment—evanescent the gloom, [tomb.
There is rest for thy toils all, beyond the dark

Oh life's but a moment of pleasure and pain,
Like a glance of a sunbeam—then darkness again. [sea,
Like marks on the sand that is washed by the
Awhile here we linger—then cease for to be.

Then away with the doubts that would bitter my life, [strife,
Be manned thou my soul and be mailed for the
A courage divine, thy lot is to share,
Thou wilt conquer, go onward and never despair.

### Modern Luxury in Paris.

A correspondent of the Times makes some curious communications on the luxury and expensive habits which at present prevail in Paris. He says, " This is truly the age of luxury in Paris. In furniture, horses, carriages, people are incredibly expensive. In play and private extravagance fortunes are daily swept away. No young or old man can pretend to celebrity without a very little hat, a cigar eternally in his mouth, an apartment crowded to embarrassment with awkward, inconvenient, ugly, ancient furniture, procured at marvellous prices ; English horses, sixteen hands high ; carriages touching the ground ; a groom of the smallest dimensions ; a reputation for gallantry, which consists in being admitted to the smoking, champagne-drinking, and gaming soirees of the shortest and plainest and least *distingues* women in Europe. The tribunal records have lately disclosed some of the secrets of the private soirees of the *Lionnes ;* and at an auctioneer's catalogue of a sale which took place last week, £1500 sterling was the price of the chimney and other brazen and china ornaments of a lady's little *entresol.* This sale was of the effects of a young person, twenty three years of age, who died a short time since, and which occupied four days. Her sister, the wife of a poor weaver, demanded the property, as sole heiress. There were as many *bijoux* in gold and ornamented with precious stones, as would set up a jeweller handsomely in trade, and more than half a hundred weight of plate and silver gilt. The rooms were impassable from the accumulation of furniture in buhl, marqueterie, and inlaid rosewood. The carpeting was an inch thick. The *Chancelliere* in which the owner placed her feet, when in her carriage, to protect them from the cold, was lined with real ermine ! In her wardrobe forty gowns were found. Laces, lace and embroidered dresses, silks, satins, velvets, furs, all of the costliest kind, and all in exquisite taste."

### Boy Carried over Niagara Falls.

On Saturday the 13th a fine lad of the name of John Murphy, aged about 13 years, in the employ of Judge Porter, in crossing to Chipewa, in a canoe, was drawn into the rapids on the Canada side, and into the " Great Horse Shoe Fall." When he was first discovered he was beyond the reach of all earthly assistance; and although the little fellow did all that his courage and strength could do, holding his slight canoe for nearly 20 minutes, almost stationary, and when tired nature gave up contending longer, with the wind and current both against him, the little fellow plunged over board and with the courage and perseverance of a man, for some time breasted the current. But, alas, too late; though within one hundred yards of the shore, he was in the embrace of the rushing cataract, which never releases its victims!

The broken pieces of his frail bark were all that were found of the little mariner.

Rochester, with its immense and increasing business, has only three Banks, with a capital of $1,029,000.

### Electro-Chemical Protection of Metals.

Prof. Brande has read to the Royal Institution, the following paper, "On the Electro-Chemical Protection of Metals." the chief subject of Prof. Brande's communication was, the description and philosophical explanation of the protection given to iron by coating it with zinc. The researches of Sir H. Davy in the years 1824-25 were noticed, and the effects of sea-water on copper, simply immersed in that liquid, were contrasted with the protection afforded to it by a cemented plate of zinc or iron. It was then demonstrated that, whenever two metals, possessing unequal affinity for oxygen, are brought into metalic contact in any medium containing oxygen, an electrical current is produced; that this current passes from the more oxidizable metal, and that the latter is protected by the increase corrosion of the former. Thus the interior of a copper stew-pan will not be affected by acids so long as any of its tinning remains; while, on the contrary, if what is called tin plate (*i. e.* iron coated with tin) be scratched, however slightly, the iron is quickly corroded, the cuticle of tin being protected at the expense of the metal which it was designed to preserve. Now, zinc on iron is what tin is on copper, a perfect protection, so long as any remains on its surface. It was then shown that, generally, the direction of an electric current depended, not only on the metals, but on the nature of the medium through which the current passed (*e g.* or whether an acid, or a solution of sulphur, or of any other electro-negative substance, was used.) Instances of metalic deposition by chemical affinity, as that of lead on zinc, of copper on iron, &c., were exhibited ; and it was shown that, whenever the electric current was superinduced by the employment of a conductor of electricity, whether metallic or not, the metal passed to the conducting (or the electro-negative) surface (the cathode of Faraday.) The process of zincing iron was then exhibited. The metal is carefully scoured, steeped in dilute acid, washed in water and thoroughly dried, and then plunged into melted zinc. As it is necessary that there should be perfect metallic contact between the metals, sal-ammoniac is sprinkled over the melted zinc, before the immersion of the iron. This covers the liquid metal with a chloride of zinc, which precludes intervening oxide, and thus insures perfect adhesion between the coating and the coated metals. Prof. Brande concluded his communication by exhibiting zinced iron piping, and by mentioning instances of the successful application of this invention, as in the cases of the iron roofing of the Houses of Parliament, the buoys used by the Trinity House, wires of galvanic telegraph, &c.—*Atheneum.*

### Great Docks.

Birkenhead Docks constitute one of the magnificent schemes of the age. This place is situated opposite Liverpool, on the Mersy, and to accomodate the growing commerce of this port, has been selected to build immense floating docks and a capacious basin accessible at all states of the tide. To show the increase of Liverpool, it is only necessary to state, that in 1816 its shipping was 620,000 tons—now it is 2,819,014 tons, which outnumbers the tonnage of London one hundred and thirty thousand tons. At the opening of these docks Lord Morpeth made a most eloquent speech on the improvements in mechanism, and one of Stevenson's engines made a far greater one by carrying a train of 7 cars from London to Liverpool and back at the average speed of 40 miles per hour, the distance is 212 miles.

### Ship Navigation by Canals.

Thirty two ships have been built during last winter, to sail without unloading from the Upper Lakes to Europe. A ship of 300 tons burden, may take in a cargo at Milwaukie, sail down through the Michigan, Huron and Erie Lakes, and thence through the Welland Canal to Ontario, then passing down through Ontario and Champlain, cut the rapids through the St. Lawrence, and then down the Gulf and across the Atlantic. It may enter the Clyde and Forth Canal, then pass through Scotland in one day, and stretch over to the Baltic, or away to the Black Sea.

## THE WEATHER, &c.

WEDNESDAY, JUNE 16th.

| | Hours, A. M. | | | | | | | | | Hours, P. M. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Therm. | 53 | 54 | 55 | 58 | 61 | 67 | 67½ | 68½ | 70 | 73 | 75 | 75 | 74 | 72 | 70 | 69 | 67 | 64 | — |
| Wires, | 52½ | 53 | 54½ | 57½ | 61 | 66 | 68½ | 68½ | 69½ | 72 | 74 | 74 | 73 | 72 | 70 | 69 | 67 | 64½ | — |
| THURSDAY, 17th. | | | | | | | | | | | | | | | | | | | |
| Therm. | 58½ | 58½ | 59 | 62 | 65 | 68 | 68½ | 70 | 71 | 72 | 73½ | 74 | 75 | 75 | 73 | 71 | 68 | 65 | 64 |
| Wires, | 58½ | 58½ | 59 | 61 | 65 | 68 | 69 | 70 | 71 | 71½ | 73 | 74 | 74 | 75 | 73 | 71 | 68 | 65 | 64½ |
| FRIDAY, 18th | | | | | | | | | | | | | | | | | | | |
| Therm. | 57½ | 57½ | 60 | 64 | 68 | 71 | 73 | 75 | 77 | 75 | 77 | 76 | 76 | 73 | 70 | 68 | 65 | 63 | 62 |
| Wires, | 56½ | 56½ | 60 | 63 | 67½ | 71 | 73½ | 75½ | 77 | 75 | 76 | 76 | 76 | 73 | 70 | 68 | 65 | 63 | 62 |
| SATURDAY, 19th. | | | | | | | | | | | | | | | | | | | |
| Therm. | 60½ | 60½ | 61 | 62½ | 65 | 66 | 66 | 65½ | 66 | 66 | 64½ | 64½ | 64½ | 63½ | 63½ | 63 | 62 | 61 | 60½ |
| Wires, | 59½ | 59½ | 60½ | 62 | 64 | 65½ | 65½ | 64½ | 65 | 65½ | 64 | 64 | 64 | 63 | 63 | 62½ | 61½ | 60½ | 59 |
| | | | | | | | | | | | | | | | | | | | *Equilibrium.* |
| SUNDAY, 20th. | | | | | | | | | | | | | | | | | | | |
| Therm. | 60½ | 60½ | 60½ | 59½ | 60 | 62 | 63 | 63 | 64 | 63 | 63 | 62½ | 62½ | 62 | 61½ | 61 | 61 | 61 | 60½ |
| Wires, | 60½ | 60½ | 60½ | 59 | 59½ | 61 | 62 | 62 | 63½ | 62½ | 62½ | 62 | 62 | 61 | 60½ | 60 | 61 | 60½ | 60 |
| | *Equilibrium ended.* | | | | | | | | | | | | | | | | | | *Equilibriums.* |
| MONDAY, 21st. | | | | | | | | | | | | | | | | | | | |
| Therm. | 60½ | 60½ | 60½ | 62 | 63 | 64 | 65 | 67 | 70 | 72 | 72½ | 72 | 72 | 70 | 68 | 66 | 64 | 63 | 62 |
| Wires, | 60 | 60 | 60½ | 61 | 62½ | 63½ | 64½ | 66½ | 69½ | 71½ | 72 | 71½ | 71½ | 69½ | 68 | 65½ | 64 | 63 | 61½ |
| | *Equilibriums ended by lightning at 5 and 6 A. M.* | | | | | | | | | | | | | | | | | | *Equilibriums.* |
| TUESDAY, 22d. | | | | | | | | | | | | | | | | | | | |
| Therm | 62 | 62 | 62 | 63 | 63 | 64 | 65 | 67 | 69½ | 71 | 73½ | 75½ | 75½ | 74 | 72 | 70 | 68 | 65 | 64 |
| Wires, | 61½ | 61½ | 61½ | 62½ | 62½ | 63 | 64 | 66 | 69 | 70½ | 73 | 75 | 75 | 74 | 72 | 70 | 68 | 56 | 64 |
| | *Equilibriums ended at 6 A. M.* | | | | | | | | | | | | | | | | | | |

REMARKS.

In my memorandum published in the Scientific American of June 19, under date of Tuesday June 15, I said, " frigid clouds in S. W. and W. at 4 A. M. The atmosphere colder here than on any morning in June 1846." Accounts received from Westminster, Carrol Co. Md. ; from the Allegany Mountains, between Pittsburg and Philadelphia ; from Rome, Oneida Co., N. Y , and from Newburyport and Ipswich, Mass., state that snow fell on Tuesday June 15, at the respective places—thus the accuracy of my suggestion as to the temperature and character of the distant clouds is fully sustained. Wednesday June 16, at 4 A. M. clouds S. W. West and North. June 17, clouds S. W. and W. at 4 A M. Friday June 18, at a few minutes past 12 M., a frigorific line in the high atmosphere was drawn from the extreme south-eastern horizon to extreme north-western—its south-western edge well defined—the wires fell suddenly 2 degrees and the thermometer underwent the same depression and both rose again. The force which made this line in the high atmosphere was exerted instantaneously and must have produced a shock at that portion of the earth's surface with which it came in contact, as it was not high enough to clear the mountain tops that were in the direction of its path. A rain storm resulted from this, during which the fall of water was one and a half ounce to the inch, equla to thirteen pounds eight ounces to the superficial foot. June 21, equilibriums ended by lightning, one discharge at 5 and the other at 6 A. M. June 22, heavy fog and cloudy at 4 A. M. House struck by lightning at North Hempstead, on Monday June 14. Hail fell abundant at the same time at the same locality. Same day British ship Columbian when off Cape Henry was struck by lightning and sunk ; four men drowned; also the day previous, a vessel was struck by lightning at Baltimore.

E. MERIAM.

*Brooklyn Heights, June* 22, 1847.

### Curious Discovery.

One day last week the workmen in digging among the foundations of Grace Church at the corner of Broadway and Rector street, which has recently been pulled down, a coffin apparently of silver, was discovered, about two feet and a half in length, containing the body of a female child, with an inscription bearing date 1767. The coffin had a glass over the face, and a little further down, a looking glass set in the metal. Near the foot of the coffin was an aperture closed by a glass stopper, which being opened it appeared that the coffin was filled with spirits of turpentine, in which the body was preserved, so that the features were seen through the glass.

### French Steamers.

The line of French Steamers from Havre to New York were to have commenced their trips in the month of May. There are four government steam frigates, called the Darien, Ulloa, Canada, Christophe Colombe, each of 450 horse power. The price of passage in the first cabin, including provisions and wines of the best quality in abundance, is one thousand francs., about $190. These steamers are to leave Havre every two weeks.

### Singular Phenomena.

A Frenchman has been recently employed at Venice in boring Artesian wells, to procure soft water. He has constructed two of these wells, one in the place St. Mary, and another in the place St. Paul, from each of which a fine spring of water rises freely many metres above the surface of the soil, whilst a remarkably singular phenomenon may be noticed in the jets of these fountains. A light being brought near, the carbonated hydrogen gas sent forth in immense quantities by the jets of water, is set on fire and burns steadily over a breadth of twenty cemimetres and to a corresponding height.—As this gas does not combine with the water, it is by this means left remarkably pure. The Venetians thus have fountains which may be illuminated by night as efficiently as they ever could be with gas burners of the very first class.

### Education in Prussia.

All children between the age of seven and fourteen years are directed to be sent to school or educated at home by their parents. If the latter plan is preferred, the municipal authorities are to be informed in what manner the education is provided. If the former, attendance is ensured by keeping a list of absentees, and submitting them at short stated intervals. to the inspection of the local committees. These are empowered to summon the parties in case of negligence, and to reprimand them, or, in extreme cases, to punish them by the infliction of such penalties as are commonly awarded by police tribunals—this is we presume by fine and imprisonment. The parents are also deprived, as a measure of extreme rigor, of all participation in the public provision of the poor. On the other hand, if poverty be the cause of absence. the commune is to furnish needful assistance in the shape of clothes or otherwise

### Awful Event.

The *Memorial de Rouen* relates the following :—" A few days ago, several working men were dining together in a public-house at Goupilleras Refeugeres, when one of them gave way to a habit of swearing by God. The master of the house made remonstrances with him, which were taken in good part. Another man, however, a weaver, named Herubal, after denying the existence of a God, uttered the most impious language, and at last said in a contemptuous tone, ' I will go and sup with your God this night.' The words were scarcely pronounced when the man fell dead upon the ground, as if he had been struck by a thunderbolt."

### Pontoon Bridge

A floating bridge, or a bridge supported by *pontoons*, has been erected over the Cuyahoga River, between Cleveland and Ohio city, in place of a bridge which was swept away last winter by a freshet. The Cleveland Herald states that the new bridge is twelve feet above the water, and rests upon five pontoons or flat bottomed boats; its whole length being 230 feet. It is so constructed, that one man can, in three minutes, with a windlass, swing around 145 feet of it for the passage of vessels.

A little wrong done to another, is a great wrong done to ourselves.

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## NEW INVENTIONS.

### Fulton's War Steamer.

George W. Fulton, of Baltimore, has invented and taken out a patent for a steamboat of a novel construction, intended principally as a war ship. It is upon the plan proposed by Rumsey, viz. by means of the reaction of water drawn in at the bow and expelled at the stern. It is made so that water can be taken in either fore or aft.

He proposes to use double acting force pumps in the place of paddles, with cylinders capable of throwing 70.938 cubic inches of water per second from each pump with a velocity of 40 feet per second and a force of 11.3 lbs. per inch, which if multiplied by the areas of the two jets would give a propelling force of 2016 lbs., allowing 4½ lbs. per inch as deduction for velocity through the water.—He also proposes to condense the steam by the water of propulsion moving on the surface of the condensers instead of a jet flowing into the condenser, also to supply the boiler with pure water from a still heated by steam—the evaporated water passes into the steam boiler.—In regard to this part of the plan, will it not take about the same quantity of fuel to produce an extra quantity of steam for the still, as would bring the salt water up to 14° higher of temperature? In regard to its superiority as a war vessel, the inventor says, "in case of receiving a shot beneath the water line, a ship may be kept clear of water, as the whole of her power may be used for pumping out, and the whole machinery being under the water line, is invulnerable to the enemy's shot; and as there is no wheel nor screw on the outside, if her machinery should be accidentally deranged her model is such that she can move as freely under canvas as any vessel intended to be propelled in no other way."

### Smith's Stave Dressing Machine.

Mr. A. Smith of Lockport, Niagara Co., has invented and put in operation a new Stave Dressing Machine, which planes staves, cut at a circle of twenty two inches crossways and fifteen feet in length. It dresses seven thousand per day. The whole machine costs about two hundred dollars. It is very simple and durable. Mr. Smith is also building a Stave jointing machine which will (he says) cost only about fifty dollars, and joints about eighteen staves in a minute.

We shall probably give an engraving of the above in a few weeks.

### Peg Splitting Machine.

There is a machine for splitting shoe pegs now in operation in the town of Boxford, Mass., in the steam mill of Messrs. Batchelder & Brothers. It was invented and a caveat entered at the Patent office by Richards & Batchelder, of Lynn, Mass. This machine splits 25 bushels of pegs per day. It is easily adjusted to any size of pegs and performs its work with accuracy. It is the result of two years thought and experiment and has been perfected in successive improvements made on various other principles, till at length it has been brought to its present form. The machine is manufactured by Richard Richards, of Lynn, Msas.

### New Thrashing Machine.

By foreign papers, we learn that a Mr. Staple of St. Enoder's parish, England, has invented a new Thrashing machine, which can thrash and make perfectiy clean 1200 bundles of wheat in an hour, or about 2000 bushels per day, with two horses going at a very moderate pace.

### Machine for Making Bungs.

We learn from the Cincinnati Gazette, that there is a machine in operation in that city invented by a Mr. Kirby, which makes perfect bungs for pork and flour barrels at the rate of one hundred per minute. We fancy that this machine will give the porkers of Ohio a complete bunging up.

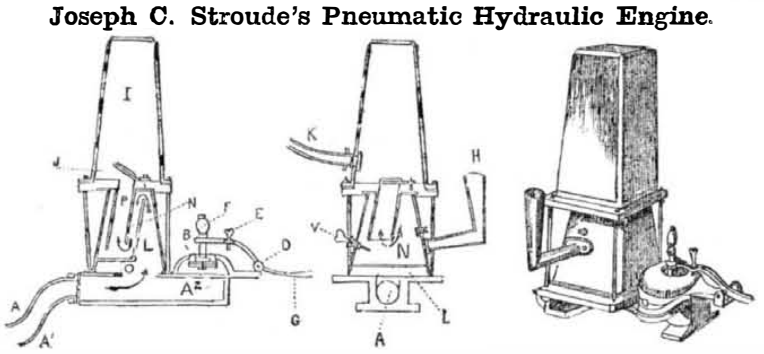
### Nail Cuting Machine.

A nail machine has been invented at Pittsburg, which feeds itself. One boy, it is said, can attend two machines, his only duty being to supply the iron.

### Pegging Boots.

Among the latest productions of Yankee ingenuity, is a machine for pegging boots by water power. It has been invented at Woburn, Mass., where it is soon to be put into practical operation.

## Joseph C. Stroude's Pneumatic Hydraulic Engine.




Much attention is now being directed to what has been long neglected, viz. improvements on the old hydraulic syphon, and among many excellent ideas regarding this science, the following invention occupies a prominent position. The invention consists (as there can be no other method for the same purpose,) of using a condensed column of air between the propelling fluid and the fluid that is to be raised. The air is condensed in the conical chamber by a descending column of water.

Fig. 1 is a longitudinal section. Fig. 2 is a transverse section. Fig. 3 is a perspective section. Similar letters in the several figures refer to corresponding parts.

A is the main pipe for conducting the propelling water from the head, or reservoir, to the pyramidal air chamber. This pipe descends below the level of that portion of it which connects with the air chamber just before it reaches the said chamber, and then ascends, in a curved line to it, forming a curved bend in the pipe, as at A 1, for the purpose of preventing the air received at the valve B, during the time in which the vacuum is produced in the air and water chamber, from filling the pipe A, as the air will not descend at said bend in the tube, so that the surplus of said air, after having filled the condensing chamber L, may be carried off, by the current of water, through the valve B. The pipe A is enlarged below the air chomber L, as at A 2, and has an opening O into the air chamber L, through which the water passes when the valve B is closed. B is a valve attached to a curved, vibrating lever C, turning on gudgeons D, in boxes, as its fulcrum, having a set screw E, for regulating the descent of the valve, and a counter-balance F, for adjusting it. When this valve B is down, as shown in fig. 3, the water from the head flows through the opening, which it closes; when it is up, as shown in fig. 1, the water rises into the pyramidal chamber L, through the opening O, and condenses the air therein. H is a pipe for conveying the water to the spring water chamber. I is the air chamber into which the water is forced. J is the valve for holding it.—K is a pipe for conveying the water to its destination. The above parts from A to C inclusive, are made and operated in the usual manner. The improvements are as follows:

L is a pyramidal chamber into which air is admitted through the valve B, when it descends by the pressure of the external air, to supply the partial vacuum created in pipe A, and chambers L N. The chamber has a communication, by a small opening M at the top, with another chamber N, called the spring, or pure water chamber; through which opening M, the air, so condensed, is forced, and presses on the spring or other water, introduced into the same through the pipe H, by which pressure, the water in said spring water chamber is forced upward through a tube P, reaching to near the bottom of said chamber N, through the valve J, into the air chamber I; said valve being represented as open in fig. 1, and as closed in fig. 2.

To raise the water with this machine, open the valve B, and let the water flow out; then by closing the valve B, the water, which is now in motion in the pipe A, will pass thro' the opening O, into the pyramidal condensing chamber L, and condense the air the same as before; the condensed air will force the spring water up the tube P, (which had entered through the pipe H during the continuance of the partial vacuum above spoken of,) into the chamber I, and condense the air therein, until its density is equal to that in the condensing chambers L and N, below; at this time the spring water will cease to flow into the air chamber I, the valve J closes, and the air in the chambers I, L and N, commences expanding, that in the lower chambers L and N, giving motion to the propelling fluid and driving it backward, producing a partial vacuum in the machine, and the air in the upper chamber I, forcing the spring water to its place of destination. The said partial vacuum in the machine, caused by the re-action of the machine, as aforesaid, and the pressure of the external atmosphere on the valve B, will cause it to open again. The water from the head then flows through this valve with an accelerating movement, until it has acquired that degree of velocity as to cause the valve to close. The water having no longer any vent through the valve B, passes through the opening O into the pyramidal air chamber L, and repeats the operation above mentioned successively.

These machines are made by H. P. M. Birkbane, Philadelphia, and Mr. Strode will attend to selling State and County rights at reasonable prices, and those wishing to make enquiry can do so by letters post paid to him at Phidelphia.

### Valve Hats.

A London hatter has introduced a kind of hat with a valve in the crown, for the purpose of allowing the heat and perspiration to escape, while a series of groven channels in the back part of the leather lining, admits the fresh air from below. This is an old invention newly vamped up. It is as old as Edward 4th.

### Iron Shingles.

This is certainly the age of iron,—iron engines, iron horses, iron chairs, and soon in some other parts of the world we shall have iron houses. Already in a number of instances iron shingles have very successfully superseded tin, slate and wood. We have seen a number of houses covered with them.—It would be a most excellent plan to zinc the shingles to prevent oxidization. Iron shingles are cast with a smallnotch in each so that one fits exactly into the other, and a covering or painting of coal tar is used to prevent rusting.

### Leather Clock.

A convict employed in the penitentiary at Alleghany city, has made a clock, the works of which are entirely made of leather. The clock is in operation in the penitentiary. It is a real leather trick.

### Improvements in the Power of the Magnetic Telegraph.

Messrs. L Hudson and S. Cornell have made a number of experiments to increase the power of the Electro Telegraph, and the following is the manner of arrangement and the results of their experiments:

With a common electro machine there is a powerful magnet lying horizontally and there is an axis fixed upon proper supports, and near one of the supports there is a pulley connected with a multiplying wheel by a belt. Towards the pole of the magnet there is fixed to the axis a non-conductor of bone surrounded nearly by two semicircular bands of silver, having a break between them on the opposite sides. Two of these bands encircle the ferule of bone to accommodate two setts of silver springs, two operating upon each band springing constantly upon each semi-circle. Next is fixed to the axis an iron cross with four arms at right angles to each other; in the end of the arms are holes into which are driven a bundle of wires standing at right angles to the arms, parallel to the axis and projecting towards the steel magnet. Upon this bundle of wire are placed coils of insulated copper wire, the terminations being connected with each other and with the semi-circular bands of the break piece. Next is a brass plate fixed to the axis through which are holes and through which holes the poles of the armature project a little. Thus the two opposite poles of the armature are nearly in contact with the poles of the magnet as they are made to pass by means of the multiplying wheel and pulley, and the instant they are leaving the two others are brought into the influence of the steel magnet. The springs are fixed upon posts and receiving the current from the ferules convey it by means of the posts to wires which may be fixed to them, &c.

What they claim as an improvement upon the magnets is the construction of the electro magnetic armature by multiplying its poles and coils of wire or hellius, &c., and corresponding springs or other contrivances as a substitute for the springs and ferules or semi-circular bands to any number more than two, thereby rendering the current more constant and therefore more effective. And the use of the magnetto electro machine thus improved as a substitute for the galvanic battery of any form for producing a current of electricity for telegraphic purposes and also as a mechanical power. Their first experiment was in August, 1846. They have passed the current through an electro magnet producing a sustaining power of between two and three hundred pounds. It had a sustaining power of more than a dozen times the steel magnet, which was only capable of sustaining ten or fifteen pounds.

### Table of Screw Cutting Machine.

We give below 15 combinations of Woodword's Screw Cuting machine, published in last week's paper.

| Arbour geer. | Outside stud geer. | Inside stud geer. | Screw geer. | No. of screw cut. |
|---|---|---|---|---|
| 120 | 60 | 42 | 30 | 4.2 |
| 120 | 60 | 30 | 42 | 7 |
| 120 | 42 | 60 | 30 | 1 3-4 |
| 120 | 42 | 30 | 60 | 7 |
| 120 | 30 | 60 | 42 | 1 3-4 |
| 120 | 30 | 42 | 60 | 4 2-5 |
| 60 | 120 | 42 | 30 | 14 1-4 |
| 60 | 120 | 30 | 42 | 7 |
| 60 | 42 | 120 | 30 | 1 3-4 |
| 60 | 42 | 30 | 120 | 28 |
| 60 | 30 | 120 | 42 | 1 3-4 |
| 60 | 30 | 42 | 120 | 28 4-7 |
| 42 | 120 | 60 | 30 | 14 2-7 |
| 42 | 120 | 30 | 60 | 57 1-7 |
| 42 | 60 | 120 | 30 | 3 4-7 |

It is capable of 24 combinations, all which go on in the same ratio as the 15 in this table. Out of 24 combinations there are but 11 different numbers produced, and there are only two whole numbers, 7 and 28. By this machine a system of geering can be selected which can cut nearly all the whole numbers from 1 to 40.

### Electric Machine.

M. Mouson has at Paris an electric machine singularly ameliorated. It gives sparks of nine to twelve inches in length, at the first turn. The whole secret consists in substituting for the two narrow cushions two leaves of tin of four times greater surface of friction. It must be understood that the leaves of tin in contact with the glass are maintained in position by elastic cushions. This machine is not at all influenced by hygrometic variations, which so often destroy the power of other machines. The *two electricities* are disengaged here in such abundance, and the sparks are so long, that it is easy to distinguish by the eye the direction of the fluid (?) and the points of departure and arrival. But we ought to add, that the plates of the machine must be made of the Bohemian glass, the base of which is potash. The plates made, as those of France are, with the salts of soda, are worth nothing for this purpose.

### Novel Steamboat.

A new steamer, called the Sarah, has been built to run between Albany and Troy, and is said to compete in speed with the locomotive on the Railroad between the two cities. Her engines are of Gold's patent, and we have heard that her paddles are of an entirely different construction from those in common use. It is considered, from what she has already done, that the passage from Troy to Albany can be performed in twelve minutes.

### Apoplexy.

In cases of apoplexy, the most prompt and efficient resort is to pour cupful by cupful of cold water upon the head of the patient.

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NEW YORK, JUNE 26, 1847.

### The Progress of Useful Science.

Objects of utility, not amusement, are now the things which command the attention of the scientific world. The metaphysicians of old occupied themselves in discussing the possibility of two spirits occupying the same place in the same space ot time, or the divisibility of spirit. The philosophers of the present age must confine themselves to the divisibility of matter—what they can see with their eyes—hear with their ears and handle with their hands. The spirit of investigation now directed in a right manner—in the true Baconian spirit—traces effects to their causes and never looks upon a result as worthy of consideration, unless the world in some manner is benefitted, and the *world* now, embraces not only princes and patricians, but also mechanics and artizans.

Since Sir John Sinclair directed attention to improvements in agricultural chemistry and mechanism, such advancements have been made in agricultural science during the short period of half a century, that double the amount of produce is now the yearly result upon an equal quantity of land. But a few years have rolled past since our farmers used to consider that their lands run out in a certain number of years, their manure at the same time was piled in mountains in their barn yards. Now the light of useful science turns the barn yard to fertilize the barren fields and what was once a wilderness, blossoms like the rose. Fields in Virginia—the broad plantations of the descendants of the cavaliers—that had become sterile deserts, are now through the instrumentality of progress in science, yielding golden treasures to the enterprising farmer, and the whole agricultural world is advancing with rapid strides in the pathway of productive knowledge.

In the progress of science as directed to manufacturing, the advancement has been still more wonderful than in the agricultural department. In half a century, the means and capacity of manufacturing machines, have not only doubled but more than quadrupled. The Cotton Gin of Whitney, can by the help of one man execute more work than 200 men without it. The Spinning Jenny—mule frame—of Arkwright, can spin as much by the labor of one man and two boys, as seven hundred female spinners and in some frames of 1400 spindles as much as 1400, and this is leaving out of the question the *self-operators* altogether. The power loom of Cartwright can weave as much cloth in one day, attended by a single female, as could be done in seven by any weaver on the hand loom. In other kinds ot machinery and their applications, the improvements have been equally grand and extensive. The steam engine attended by four men, can accomplish as much as five hundred horses. Wonderful indeed has been the progress of useful science during the last fifty years! Science now is directed to produce and the greater the amount of product through its instrumentality, the greater amount of benefits is conferred on the human family. Machinery is not an evil, as some think, because it supersedes some occupations—for whatever machinery can produce, its products are not for its own benefit but for the benefit of man It may indeed be sometimes wrong directed, and some may derive benefits from it, to the injury of others, but this is the fault of its direction, not the thing itself. Science, mechanical or chemical, has undoubtedly been a benefit to all, both high and low. The mechanic at the present day can enjoy the luxury of a carpet, a thing which Henry the 1st could not do with all his wealth, and as for a knife and fork, such things were not in all his kingdom. Straw was then used for carpets, and swords and daggers for knives. The houses of the working classes, too, in those days, were mere hovels, yea before the American Revolution they were universally nothing more throughout all Europe, but science now steps in, and comfortable dwellings are to become the property of the peasant as well as the prince. A company has been formed in this city for this beneficent object, and the first prize given out in the British School of Design, was for the best plan of a neat and comfortable workingman's cottage. Thus the moral and physical sciences go along hand in hand as they should always have done, and which if they do, they cannot but make every improvement, great and small, tend to the elevation of our race and the glory of the whole moral statutes.

### Splendid Astronomical Instrument.

The great Refraction Circle, ordered for the National Observatory has arrived. It came in eight large boxes, and is one of the most splendid instruments—not to be used as an equatorial—in the world. It has an object-glass of 7 inches, with a focal distance of 108. It has two circles of 4 feet each, with 12 reading microscopes. It is so constructed that it is its own collimator; and its eye-pieces, of the highest power, are collimating eye-pieces. It has a collimator, also, through the axis of rotation. It has the advantage of reversing readily between two piers instead of at the side of them—a most important point. Yet so perfect is the machinery for reversing the instrument, that the immense weight—of more than two thousand pounds—can be raised with the little finger. In all its parts it bears marks of the most exquisite workmanship. It was made to the minutest parts, after plans and drawings furnished by Lieut. Maury, Superintendant of the National Observatory, and is pronounced a most perfect instrument.

### Free Schools.

The cost of sweeping the streets of New York City three times a week, is nearly $200,000 per annum. In Aberdeen (Scotland) the yearly expense of sweeping the streets daily, is £1,400; the manure sells for £2,000. In Perth the cost is £1,300, and the receipts £1,730. In Philadelphia, the cost of cleaning the streets is not over $10,000 per annum and with judicious management, many think that the streets of N. York could be cleansed every day at an annual cost of $50,000, while others assert that the manure ought to pay the expense. In fact enough might be saved in this single item, to establish seven Academies or Colleges for the free education of our poor youths. Yes,—let every citizen remember it—money enough has been and is squandered every year in this city, to give splendid educations to several thousand poor young men.

The above extract from the *N. Y. Sun*, speaks volumes for the welfare of our mechanics' children.

### A Great Mathematician Gone.

The last accounts by the Cambria, brings the melancholy intelligence, that Thomas Chalmers, D. D., a most eminent divine of the Free Church of Scotland, had been suddenly called to the bar of that Great Creator whom he long and sincerely served. Dr. Chalmers, although a clergyman, devoted much of his time to the study of mathematics, a science of which he was remarkably fond, and by which he had at a very early age, greatly distinguished himself. He was also well versed in astronomy and the practical sciences, and it is not too much to say, that he possessed a more intimate knowledge of all the arts and sciences than any clergyman in Britain.

### A Great Statesman Gone.

Daniel O'Connell—the great Agitator—has also paid the debt of nature. He had served a long and an eventful soldiership on the political battle fields of England. He was not an elegant writer, but his voice could sway every passion in the Irish breast. His darling object, the repeal of the Union, failed as a splendid scheme for his country's elevation.—His labors at such an advanced age, for that object, undoubtedly hurried him swifter onwards to his last resting place. He died at Genoa, Italy, and requested his heart to be sent to Rome and his body to be taken to Ireland.

### Wheat.

It is estimated that the receipts of Flour, Wheat, and Corn at Troy and Albany, during the month of May were as follows: Flour 650,000 barrels; Wheat 250,000 bushels; Corn 930,000 bushels.

### Patent Mile Index.

The following is a description of the Patent Mile Index, invented in London and said to be applicable to carriages of every description and to be so compact in its shape that it scarcely can be seen while the carriage is in motion. A planospiral rotator is concealed within the hoop of a nave of one of the hind wheels, and gives motion to a shaft or small rod of iron which is carried horizontally nearly as far as the opposite wheel. At this point a universal joint connects the horizontal with a vertical rod, which latter continues the action into the body of the carriage under the seat. Here two or three wheels give motion to a suitable shaft or chain, which is concealed between the panels of one side of the carriage, and terminates near the roof in a dial plate provided with two faces, one inside for the use of the passenger, and the other outside, from which the driver and his fare can together note the position of the hands before the latter steps into the cab. Both dials have exactly the face of a clock, being furnished with an hour and a minute-hand; and hours, half-hours, and minutes are indicated on the dial precisely as in the ordinary time piece. As the hands perform the circuit of the dial, the divisions of hours, half-hours, and minutes, correspond exactly with the miles, half miles, and fractions of a mile actually traversed by the vehicle. Thus, if the dials indicate 20 minutes past 12 when the passenger enters the cab, he will know that he has travelled a mile exactly when the dial within points to 20 minutes past 1; a mile and a half when it points to 10 minutes to 2; 2 miles when it arrives at 20 minutes past 2; two miles and a half at 10 minutes to 3; three miles at 20 minutes past three; and so on. A small circle within the dial-face, with a pointer answering to the second hands of a watch enables the owner of the carriage to satisfy himself as to the total number of miles which the vehicle has travelled in any given period.

The passenger is thus supplied with a perfect check against overcharge, while the proprietor has the means of knowing the amount of mileage actually performed. The convenience and simplicity of adopting, as the index of distance, a method of calculation so familiar as the face of a clock supplies, need hardly be pointed out.

Two points essential to success in such an invention remain to be noticed. The contrivance must, in the first place, accurately denote the distance traversed; and in the next place the apparatus must be of such a nature and so placed that it cannot be reached and tampered with either by the driver or the passenger. These two requirements appear to have been fully provided for by the inventor.

### Sponges.

Persons who are in the habit of the daily use of sponge as an article of the bath room, may not be aware of the living properties of this peculiar substance. That sponge is a fungus most people understand, though its animal history is little known. A late English lecturer upon curious physiological matters, says that sponge is a living garbage, vegetating at the bottom of the sea; it grows to rocks and assumes the shape of a cockleshell, the living animal is the gluey white of egg looking substance which is spread over its sponge body; the article known by that name in commerce, being merely the skeleton of the animal. The lecturer declared that the very flints were nothing more than cystallization of sponges. To prove that stones had lives, he went into certain geological inquiries, and subsequently spoke of snails, cuttle fish, &c., and showed that the mouth of the snail was furnished with a cutting piece of mechanism, far superior as a piece of cutlery to any artificial knife or razor; in which articles inventive improvements might be attained by a careful study of the snail's mouth.

### The Money Coined in the United States.

The coinage during the 55 years that the mint has been in operation, has been in gold fifty two millions of dollars; in silver sixty nine millions; in copper, one million one hundred thousand:—total 122,500,000. The average amount coined for the last three years has been about six million dollars.

### Lake Superior Copper and Silver.

From the Detroit Free Press we gather the following interesting facts.

The first arrivals from Lake Superior have bro't down a number of individuals who have during the winter been prosecuting their works in the search of mineral. All our previous accounts are nothing in comparison to the accounts now given of the mineral wealth of that region. When we predicted a short time since that this region would supply the world with copper at a much less price than Cornwall, we had not anticipated these very large deposites of silver, rivalling the mines of Mexico.

We yesterday had the pleasure of seeing Mr. T. C. Childs, the agent of the North American Company, who is on his way to Montreal, with several casks of mineral taken from the location known as the Prince Location, and from the vein discovered by Capt. Kinzie the last season on Spar Island.. It has been traced to the main shore, where the specimens now here were obtained. The mineral is a vein stone strongly charged with metalic silver. It is associated with calcarious spar, quartz, sulphate barytes and cloud or vein stone. The specimens of silver from the south shore are very rich, but not of the character of those found by Mr. Childs on the north shore. We have been informed by those who have seen and examined specimens from the celebrated mines of Durango and Chihuahua, in Mexico, that those obtained from lake Superior have a very strong resemblance to them. All the indications in that country would lead us to believe there was mineral wealth beyond calculation.

### Sudden Conversion of Iron into Steel.

Some years since, the warehouse of J. S. Welfard, Esq., of Virginia, was burnt before its contents could be removed. In the basement was stored bar iron, and a large quantity of salt in the room immediately over it. A few days after the iron was dug from the ruins, at which time a planter sent his servant to Mr. W. for a bar of iron. Mr. W. sent one of the above bars. The servant returned saying, "Massa you sent us a bar of first rate steel; we want a bar of iron." Mr. W. accordingly sent another bar of the same lot. Again the servant returned, saying, "Why Massa, you send us another bar of steel." And true enough, for on examining the remaining bars they were, one and all, found to be steel of an excellent quality.

### Schools of Design.

A school of Design, with seven teachers, has been established by the British Government in London, where 200 persons are instructed in drawing, shading, coloring, perspective, modelling, &c. A small tuition fee is charged, and the balance of expense is paid by the nation. The British Society for the Promotion of Arts, &c., have offered a prize of 30 guineas ($154) for the best design and working drawing of a workman's Cottage, to combine cheapness with convenience, comfort, wholesomeness and neatness. A similar school has also been established at Manchester and one in Paisley.

### Cheap Fare to Montreal.

The fare from Troy to St. John, Canada, is now only 37½ cents. The travel is literally immense.

### To New Subscribers.

Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

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### The History of Printing.

FOREMOST of the mechanical arts which promote the prosperity of man, is Printing. There is none which has exercised, or will probably exercise a more beneficial influence upon him than this. There is none which affords him greater help in lessening the evil of his lot. What activity it has given to thought —what a light it has thrown upon the dark places of the world—how rapidly and how widely it has spread the seeds of knowledge —what a comparative stability it has given to language! "What diverse effects this new invention of printing hath produced," was a remark of Cardinal Wolsey, and every year since his time has given occasion for a repetition of the same observation At the dawn of so much enlightenment the moles and bats might well be alarmed, and declare that *they must root out printing, or printing would root out them.* Thus Andrew Marvell expressed the sentiments of such persons in a cutting strain of irony—"it was a happy time when all learning was in manuscript, and some little officer did keep the keys of the library. There have been ways found out to banish ministers, to find not only the people but even the grounds and fields where they assembled in conventicles; but no art yet could prevent these seditious meetings of letters. Two or three brawny fellows in a corner, with mere ink and elbow grease, do more harm than a hundred systematic divines with their sweaty preaching. Oh printing! how hast thou disturbed the peace of mankind!—that lead when moulded into bullets, is not so mortal as when formed into letters!"

The origin of the art in the East, is dated by some writers before the birth of Christ, and in China it is supposed to have been known in a rude way for three thousand years "As the stone *Me* (a word signifying ink) which is used to blacken the engraved characters, can never become white, so a heart blackened by vice, will allways retain its blackness." So said the emperor Van Vong, who flourished 1220, B. C. In all probability the printing thus alluded to was done by the application of each engraved block to the paper by the hand. The Chinese, however if they can be said to possess the art of printing, seem to have kept it to themselves, and like all hoarded wealth, it appears to have done its possessors little good. The dissemination of books must have been very slow as long as they were entirely produced by the hand and pen. Caxton uttered his complaints against the labor of transcription in these words:—"Thus end I this book, and for moche as in writhing of the same my penne is worn, myn hande wery, and myn eyne dimmed with over moche looking on the whyt paper, and that age creepeth on me daily." Earlier than his time a few books had been executed from engraved blocks of wood, of which the earliest is dated in 1423, and contains the curious print of St. Christopher, alluded to in the history of engraving. The manuscripts produced by the monastic scribes and others, were frequently richly ornamented with miniature painting, and the writers took delight in coloring (or miniaturing, as it has been called), the capital letters throughout. Such Manuscripts as these are now stored up in museums as specimens of the industry and ingenuity of past times, when newspapers and magazines were not. Of course it was only the rich that could afford to buy books. We learn from a letter addressed by Bonomia Becatellus to the king of Naples, that the price of a volume of Livy's works, was 120 golden crowns, and that to purchase the whole he had to sell a piece of land. It is a fact, that a Countess of Anjou paid for a copy of the homilies of Harmon, bishop of Halbertstadt, 200 sheep, five quarters of wheat, and five quarters of rye.

There have been four principal competitors for the honor of having invented the art, namely, Gutemburg, of Mayence, Fust or Faust of Strasburg, Schoeffer of Gernsheim and Costar of Haarlem. If ever any man deserved to be held in grateful remembrance by his fellows, it is the inventor of printing, but such was the ambiguous manner in which it came to light, and so little information is there upon which we can rely touching its early history, that the matter must, we fear for ever remain shrouded in uncertainty like the beginnings of many other important things. However it is usually considered that Gutemburgh, alias Gensfleisch, has the best claims to the invention. He settled at Strasburg about 1424 as a merchant, and about 1442, he produced some school-books, printed from types, and eight years afrerwards, he published a printed Bible, in the latin language, which has been commonly called the Mazarine Bible, because a copy was unexpectedly found about the last century, in the library of Cardinal Mazarine at Paris. In the mean time he had entered into partnership with Faust, which was dissolved by reason of some disagreement that occurred, and the two men set up business separately in Strasburg. In 1457, an edition of the Psalter was published by Faust and Schoeffer—in the preface to which, they assumed the credit of the new invention. To the latter has generally been assigned, a contrivance by which the making of types was facilitated, namely by forming punches of engraved steel, whereby matrices were struck, and then the types cast. As to Costar, so dubious and uncertain is the origin of his splendid discovery, it has been asserted that no such person existed. However, at Haarlem, they have a different tale, and the current tradition is, that to beguile an idle hour, when strolling in a forest near Haarlem he began to carve letters in the bark of a beech tree, and then took an impression of them. He then took a loose piece of wood and did the same thing, only he laid upon the characters a species of adhesive ink. With such rude materials as these, he produced a book in Flemish, but as he printed the leaves only on one side, he glued them in pairs back to back. He then tried metal types, and his experiment succeeded completely. It happened that amongst the persons he employed there was one who disregarded the oath his master imposed, and having learned the secret of making moveable letters, he stole away secretly to Mayence. This was no other than the above mentioned Faust. Whether we believe this story or not, true it is, that the Haarlem people have raised monuments to their illustrious Costar, and celebrate an annual festival to his memory as the undoubted inventor of printing.

Gutemburg removed from Strasburg to Mayence, and having there procured an advance of money, he set up a press and issued a Latin Dictionary, a Bible, and some other works. The works of the printers were then stopped by the invasion of Adolphus, Count of Nassau, whose service Gutemburg entered, and we hear no more of him as a printer. Faust is reported to have gone to Paris to sell some of his Bibles, and to have died there of the plague. and the name of Schoeffer alone, afterwards appeared on the books issued from that press. The popular story of Dr. Faustus and the Devil, found in so many languages, is said to have taken its rise from this individual. It seems that the better to keep their invention secret, the old printers formed their type in the shape of written characters; but as they sold their books at a rate much less than the venders of manuscripts could possibly afford, sixty crowns instead of five hundred, was the price asked for a bible), Faust was charged with having dealing with the evil one. Something peculiar in the colour of the red ink with which the books were ornamented was noticed it was affirmed that it was the blood of the printer which the devil compelled him to use. He was apprehended on a charge of sorcery, and condemned to be burnt, but he saved himself by revealing his secret.

*(To be continued.)*

### Kissing.

How delightful it must be for a young gentleman to kiss the paint and dirt from the cheeks of a smiling lass; and who in the act is transported in an ecstacy of delight and admiration, by the heavenly sweetness, like some little urchin licking "lasses candy!"—And how pleasing and delightful it must be to a young lady, to have her face kissed by one whose lips are bedaubed with the filthy juice of tobacco; and whose breath smells strong of the noxious weed, together with the fumes of alcohol! It must be supremely sweet to them—the 'the nectar of heaven.'

### Remarkable Phenomena on the Black Sea.

The Journal of Constantinople says a phenomena which was nearly attended by the most disastrous consequences lately occurred in the Black sea. An Austrian steamer of Lloyd's company the Stamboul, was proceeding to Constantinople in a calm state of the weather, and was within an hour's distance of Synope, when suddenly the sea opened under it, assuming the form of a vast tunnel: the waves, in closing, covered it almost entirely, swept the deck, and did the most serious damage. The shock was so violent that several leaks were sprung, and the vessel was sometime in recovering itself from this terrible pressure and getting fairly afloat again. It rose, however, after some pitching, but injured to an extent that if another shock had taken place it would inevitably have been lost with crew and cargo. It was with the greatest difficulty that it reached the port of Synope to refit; after which it proceeded to Constantinople, where it arrived safe and sound. Those who were witnesses of this incident thought at first it might have originated in an earthquake; but nothing of the sort has occurred elsewhere. It must be admitted that some submarine dislodgement opened under the ribs of the vessel an abyss, into which the waves rushed, and in this way they formed a gulf, in which she narrowly escaped being smashed and swallowed up.

### The Kaleidoscope.

This optical toy is formed by two plane mirrors, or slips of glass from 6 to 10 inches in length and from an inch to an inch and a half in breadth at one end, and a little narrower at the other, joined together along the edge lengthways and inclined to each other at an angle. The edges of the mirrors are kept in contact by a slip of black silk glued along the back of the plates, which must be coated with black varnish to prevent reflection. The glasses being adjusted at the proper angle are placed within a tin tube, where they are kept in their proper position by pieces of cork or wood wedged in between them and the tube. One end of the tube has a small circular aperture in its centre to which the eye is applied. In the other end two plane glasses are fixed parallel to each other perpendicular to the axis of the tube, about an eighth of an inch apart. Between these glasses, which form a cell, the objects which produce the images are placed. These are generally fragments of colored glass, beads, &c., of such a size as easily move when the tube is turned round. On applying the eye to the aperture of the tube, the objects within the cell at the other end are multiplied by repeated reflexion from the two mirrors and a succession of beautiful symmetrical images are presented to the vision. Every motion of the tube presents a succession of pleasing combinations.

This instrument was invented by Sir David Brewster, and it is said that 200,000 of them were sold in London and Paris in three months after it was made public.

### Cure for the Bite of a Rattle Snake.

The most simple and convenient remedy, says a correspondent of the Macon Messenger, I have heard of, was alum. A piece of the size of a hickory nut, dissolved in water, and drank or chewed and swallowed, is sufficient. Some planters whose hands are exposed to be bitten by rattlesnakes, always have themselves provided with it in their pockets. Olive oil is also recommended as a remedy.

### Singular Explosion.

Mr. John Haven of West Hartford, attempting some weeks since to slak some lime for whitewash, with hot water in a boiler on the stove, had reduced the whole, as he supposed into a liquid, but on adding another dipper full of water the whole exploded with a loud report, and scattered the whole mass about the room, throwing some of it with great force against the ceiling, and into the face and eyes of Mr. Hazen, destroying both his eyes and so badly burning him that his life was despaired of at the last accounts. It is supposed that some of the lime must have remained dry at the bottom of the boiler, thus causing an explosion by adding the water when the lime had been heated.

### A Discovery.

About two miles from Sandusky, Ohio, on land known as the "Kerr tract," there is an ancient Mound, circular at the base—about 39 feet in diameter, rising ovally to a point, which is surmounted by an oaken stump probably originally 2 feet in diameter, which is almost totally decayed from age. A short time ago some boys dug into the mound, and nearly under the stump, at the depth of three feet, a skeleton was found, much decayed, but portions of it in a fair degree of preservation. Near the head were found two stone hatchets an arrow head, a stone pipe, and far more singular—a lot of plates apparently isinglass, which are covered with lines and hieroglyphics of different and beautiful colors. The colors and workmanship betoken a more advanced and entirely different state of the arts than has been heretofore discovered in the remains of Indian tribes. Some of the plates were destroyed, but there are fifteen preserved. They are circular, oval in shape, and about 7 inches by ten in size. A pipe bowl, beautifully finished from stone, was also found. The bowl, which is nearly round, rises from a base on the bottom of which are the figures "1461."

### Honest Worth.

A shrewd old gentleman once said to his daughter.—"Be sure, my daughter. that you never marry a poor man; but remember the poorest man in the world is one that has money, and nothing else."

A man in a coarse suit and a face begrimed with the honest smut of his vocation and his hands hardened by his toil, commends, or commands infinitely more respect from all sensible men or women, than the strutting and purse-proud nothing, which is wrapped in costly clothes and decked with glittering tinsel, not half so empty as his head.

"The man's a man for a' that."

And so he is, whether in a tow cloth frock, or a velvet doublet.

"Honor and shame from no condition rise,
Act well your part—there all the honor lies.'

### A Milk Seller's Confession

A German had made his fortune in Philadelphia, by selling milk. He started home with two bags of sovereigns. On shipboard he counted one bag of his treasure A mischievous monkey was watching his operations. As soon as it was replaced and tied up, and the other bag emptied, Jacko, snatched up the full one, and was soon on the masthead. He opened the German's bag and after eyeing the pretty gold proceeded to drop one piece upon the deck, and another in the water until he had emptied the bag. When he finished, the German threw up his hands exclaiming,

"He must be the Dayvil, for what came from the water, he does give to the water and what came from the milk, he gives to me!"

### An Invisible Lake.

The Mad River Railway, Ohio, is now used from the Lake to Richmond, 92 miles, and in the course of this month will be completed to West Liberty, which is within 24 miles of Springfield An Ohio paper has the following notice of a portion of the country over which it was designed to extend the road:—"Between Bellefountaine and West Liberty the road crosses a small prairie which is evidenly a lake, over the surface of which a heavy sod has grown. The road was graded and contractors were about to deliver it as finished, when suddenly it disappeared, and twelve feet of water was found in its place. Thirty yeaars ago the grass was cut on this prairie, and hauled off in a heavy wagon. It is supposed that there is a subterranean communication between it and the neighboring lakes. The road will probably be carried around the prairie."

### Shoeing the Army.

A shoe manufacturer, who had made a contract to supply shoes for the army at $1,05 per pair, had a large lot of them condemned as unsuitable by the Government Agent in Philadelphia. A Yankee packed them up and started off South, and sold them to another Government Agent for $1,50 per pair. That's the way they pick that old goose of an uncle Sam.

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### TO CORRESPONDENTS.

"S. W. M".—You will perceive a description in this number relative to the electro operation about which you have made some inquiry. You can easily make the experiment about which you have spoken.

The Steel Bell is known by the name of "gong." It is used in oriental countries, as we use bells here. It is simply a peculiar combination of silver and steel, in the form of a crescent. We have heard them clearly ringing at a distance of 7 miles. We cannot tell whether or not it would do so well for a country church as a common bell.

"J. B. F. of F."—The principle of the camera Lucida will be explained next week. The mode of its construction can be best ascertained at an optical manufactory. They cost from $6 to 8.

"H. G. of R. Mich."—We shall give a sketch of your invention in the next number,—could not sooner. The information which you require will be found in No. 1, of this Vol. Sci. American, but the sale of the invention prior to application for patent does not invalidate the grant.

"J. C. of N. H."—We do not know of a machine to cover wires so well as the one you have invented. There may however, be such a thing. Your wind mill must be first tested to prove its superiority. Persevere in your mechanical pursuits.

"B. G. of N. B."—We have received the drawing of your Rotary Engine and should be happy to have a cut and the same published. We have received another apparatus more simple than yours, which is to be tested in a short time in this city, if successful we shall publish an engraving and description of it. It is not possible to give a correct opinion about a Rotary Engine until it has been tried.

"J A. of P."—We have also received your drawing of a Rotary Engine, and like that of our worthy correspondent's above, it has some points of difference from any other with which we are acquainted, but it has a strong resemblance, with the exception of the valves, to Mr. Wood's, invented in 1787. Yours, however, is more simple and therefore better. We hope to see something grand come out of experiments on Rotary Engines. Experience you know is the only test. We have received no less than 8 different plans in two weeks for Rotary Engines. We should like to publish engravings of these, so that the judgment of the mechanical world might be obtained.

"J, P of D."—If two persons apply for a patent of the same kind at the same time, proof must be submitted of the time when invented. All the information you require will be found from No. 1 of this volume of the Scientific American, running through a series of articles, as information for persons applying at the Patent Office.

"R. B. of P., R. I."—Affirmation must be made of the originality of an invention, before a patent can be granted.

"N. O. of M."—We have received your communication, but have not seen your machine; neither has your brother called. We should like to see it in operation.

"S. U. of Ct."—Pray who told you that there was no electricity to be obtained from the earth? It is to be found in earth, air and sky. Bain's Electrical Clock, is evidence of the source from whence it can be obtained and how concentrated. Don't give utterance to such absurdities again, but learn to acquire more true scientific knowledge.

"J. W. R. of O."—The Mechanical Movements are only skeleton views of mechanical variations. There are other and far more practical applications now.

"J. C. of Pa."—We are much obliged to you for your kindness. We are pleased to witness the great interest which mechanics throughout the whole United States take in the Scientific American. Its circulation is now the largest of any other mechanical paper in the world.

"J. W. C. of N. Y."—We wish you had explained what benefits are to be derived from your hydraulic carriage. That it will operate, we do not doubt, but a reference should always be had to the first movers—the motive power, whence derived, and how retained is the most important consideration.

"A. F."—what has become of the *water blast*; did you receive the communication sent?

"S. G. of Y."—It is impossible for us to say whether we should be willing to embark in your enterprise until we have a more full description of the invention.

B. F. S. of Pa.—We have credited the amount you specified towards your subscription.

A number of notices are necessarily delayed till next week.

☞In consequence of the frequent mis-direction of letters addressed to this office i. e., in often directing to the Editor, letters that pertain to the business of the Publishers, and vice versa, we are induced, in order to remedy the difficulty, to request our worthy correspondents to address all their communications hereafter to the publishers, whether they be upon business of the office, or soliciting or imparting information upon scientific or mechanical subjects.

### Bagley's Gold Pens.

Among the many improvements of the present age, we are apt to look over some exceedingly essential to the facilities of business, and convenience and profit of the merchant and mechanic. Thus the gold pen, an invention of but a few years old, is almost lost sight of, but no person who has had the good fortune to possess one, would be without such an instrument for any consideration. The gold pen, if rightly used, will last for years, it needs no mending, is always ready to write, and can be carried in the pocket anywhere. It is cheaper than either steel or quill and to those who wish a good article, we can, from what we have seen, highly recommend Bagley's gold pen as being unsurpassed if equalled by any other. Manufactory 189 Broadway, up stairs.

### Columbian Magazine.

The July number of this splendid Monthly, has made its appearance, and with the present number commences its eighth volume. We have always considered the Columbian the best literary Magazine published in this country, and we cheerfully recommend it to the public as such. Now is an excellent time to subscribe as this number commences a new volume. Ormsby & Hackett publishers, 116 Fulton Street.

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We having purchased the entire interest of the Mechanics Journal, heretofore published in Albany, would request that all new subscribers forwarding names or money for the paper would address their communications to this office MUNN & CO.

New York, June 25th, 1847.

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☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

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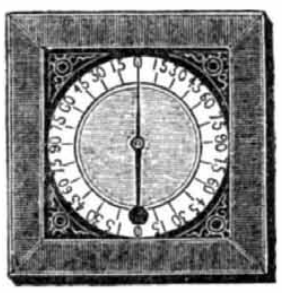

THE UTILITY of this invention so far exceeds the expectation of the inventor that he has been induced to engage in the manufacture of them to a large extent. It is understood from the engraving, that the proper position of the instrument is vertical, and that the weight of the ball will keep the index in a perpendicular position, so that either the bottom or side of the frame being placed against a horizontal, vertical or oblique surface, the index will show its inclination, (if there be any) in degrees.

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## THE ART OF PAINTING.

(*Continued from No.* 39.)

PAINTING IN OPAQUE WATER COLORS.

It was intimated in the commencement of this series, that no inconsiderable part of the art of painting, consisted in that of ornamental and fancy painting in water colors, or what is by way of distinction termed kalsamine painting. The most elegant scenery, the most splendid panoramas, and brilliant landscapes, are produced with colors ground and mixed with water, and tempered with glue, alum or isinglass, to harden and render them permanent. The usual proportion of ingredients used in the preparation of the menstruum for this work, is one pound of fine white glue, and two ounces of alum to two gallons of water. For more delicate work, and where the smell of the glue would be objectionable, gum arabic, or even rice glue, may be substituted. The alum may be dispensed with, but its presence tends to secure the work against injury by water. Nearly all the different colors and pigments used in oil painting, with the exception of white and red lead, are also used in this branch, besides a great variety of other bright and brilliant colors, prepared expressly for this kind of painting, Spanish white, commonly called *whiting*, and Paris white, constituting the bases of most of the light tints. The tools used, consist of all the variety of brushes and hair pencils, that are used in oil painting, besides various large and flat brushes peculiar to water painting, and not used in oil. In theatrical scenery painting, which is principally executed on canvas, the cloth must be first sized with thin paste, and dried, before the colors are applied; but in painting on plastered walls, no preparation is necessary; and this paint being in general much more perfectly opaque than oil paints, only one coat is required to produce a full opaque and uniform body. The colors are first mixed with water, to the consistence of masons' mortar, before the glue sizing is added; they are then diluted with the sizing to a convenient consistence for working freely. In the progress of the work when colors become too thick or stiff by evaporation, they must be diluted with water instead of the sizing; otherwise they will become so strongly tempered with glue, as to be in danger of cracking at the surface in the course of time, if not immediately. These colors when once mixed with the sizing, cannot be preserved but a few days at most; wherefore it is better to keep the paints on hand, ready ground in water, and temper them in small quantities only, as they are wanted for use. The whites require no grinding; neither do Venitian red nor yellow ochre — Lampblack, which is the principal black used, requires to be first mixed with rum, or other spirits, and water, in equal quantities, and ground perfectly fine, before being used. The principal colors peculiar to this branch, are slip blue, celestial blue, blue verditer, green verditer, rose pink, and Chinese yellow; these require no grinding. All these colors change several shades, some more and some less, in drying, and it is one of the principal points in the arts of water painting, to judge the extent of this change, so as to prepare and apply such colors and shades as will appear as intended, when dry.

LANDSCAPE PAINTING ON WALLS OF ROOMS.

This kind of painting having been thoroughly proved to be cheaper and more durable as well as more elegant than paper hangings, there appears no other good reason than the want of competent artists to execute such work, to prevent its coming into general use, in preference. A convenient apparatus for this branch is easily obtained, and the expense thereof is comparatively trifling. About twenty different colors most of them in small quantities, the same number of small tin cups and a dozen common paint brushes of different sizes, constitute the principal requisite preparation There are a variety of compound colors required in the process, which will be described progressively. The first part of the process after having prepared the colors as directed in our last number is to examine the walls, and fill up all the cracks and holes with a putty made made of whiting (Spanish white) mixed with glue sizing. This is best performed with a piece of wood in the form of a chisel, an inch or more in width. Then draw a line with a lead pencil or flat piece of lead, round the room, on a line with the bottom of the windows, and another about five feet from the floor, if the room is high; otherwise this line may be lower; the first is termed the dadoe line, and the latter, the horizon line; it being intended to represent the height at which the surface of the ocean would appear, if represented in the painting. The observation of this line is very important, as it serves as a guide in locating the distances, and various objects therein. Make a *skyblue* by adding celestial blue to whiting till the color appears about two shades deeper than it is intended when dry Also make a *horizon red* by mixing together ten parts in bulk of whiting with two of orange red and one of chrome yellow. Then make a *cloud color*, by mixing an indefinite small quantity of horizon red with whiting. Every compound color should be mixed before being diluted with the glue sizing.) The sky-blue may be applied by a large common paint brush, either new or worn; but a brush for the application of the cloud color should be large and short. A half-worn brush is best, but if this cannot be obtained, a new brush may be wound with twine so as to reduce the length of the brush part and will answer the purpose. Paint the upper part of the walls from the top to the vicinity of the horizon line with sky-blue, but leaving a space from six to ten inches above that line, which must be at the same time painted with the cloud color, and these two colors must be blended together by brushing vertically till the cloud color gradually disappears in the blue Also immediately, and before the blue is dry, a variety of rising clouds may be formed by striking the cloud brush, charged with cloud color, endwise, or nearly so, but with the handle inclining a little downward, upon the walls, forming such curves and pillar forms as rising clouds present. Floating clouds may be also represented high upon the walls, by a similar process, and painting the lower edge of the clouds with a light *slate color* (a mixture of black, slip blue and white) slightly tinged with venetian red, or pink. We shall present an engraving, in illustration of this subject in our next.

### To Prevent Flies from Injuring Picture Frames.

Boil three or four onions in a pint of water; then with a gilding brush do over your glasses and frame and the flies will not alight on the article so washed. This may be used without apprehension, as it will not do the least injury to the frames.

The above receipt so universally copied will last one night if there be no rain.

### Cleaning Kid Gloves.

Fold a clean towel three or four times, and spread the gloves on it quite smooth; then dip a piece of clean flannel into some new milk, and rub on it plenty of brown soap; with this rub the gloves downwards, holding the top of the glove firmly with the left hand. When the gloves, if they be white, look of a dingy yellow, they are clean; or if colored, when they look dark and soiled, lay them to dry, and that they will soon look almost equal to new. This receipt can be easily tried.

### To fasten Black Color on Cotton Goods.

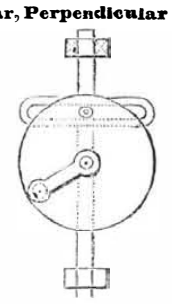
After the goods are finished in the logwood run them through a weak solution of the bichromate of potass, and then dry them. This may appear too simple a method for any effect, but a course of practice has fully tested the value of this simple means of fastening the color. Receipts recommending salts as a means of making colors permanent, cannot be trusted, as experience has given no proof of any more efficacy being in salt than in cold water.

### Red Ants.

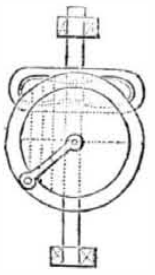
To keep them away from your cupboards, keep one pint of tar, in two quarts of water, in an earthen vessel in your closets, and you will not be troubled with the little red ants. —When first mixed, pour the water on hot.

## MECHANICAL MOVEMENTS.

### Circular, Perpendicular Motions.



In changing the motions of machinery, it is often necessary that circular motion is wanted to be changed into perpendicular and sometimes to horizontal and at others into what is called eccentric, and vice versa. These various changes, or communications of one kind of motion entirely different from the first mover, are all most beautifully displayed in the various motions communicated circularly from the walking-beam of a steam engine by perpendicular motion, or in a cotton or woollen factory in a contrary manner, from the circular motion of the water wheel. The above cut shows how perpendicular motion can be communicated from circular as by a wiper on a wheel moved by a winch and striking once in every revolution of the wheel the cam of the shaft, and it sometimes was done by the pinion moving up and down in a slot of the shaft as in the dotted lines, driven by a crank. This however, is severe upon the journal, and causes much friction.



The above cut is also descriptive of the same change of motion as the first, only showing how the strokes of the perpendicular may be varied in the length of a range, as displayed by dotted line. The extent of any range is governed by the length of the diameter of a wheel, and accordingly the diameter of a sweep being lengthened or shortened, so will be the stroke of a shaft, and it only requires the construction of apparatus to make all the change in machinery to operate and change according to the strokes wanted either for speed or power. In different places there are different plans for producing economical and equal resistance to the first power. When a change from circular to perpendicular motion is wanted, a plan like that outlined in the above cut was once found perfectly common, and it yet displays the principles of mechanical change, whereby perpendicular motion may be communicated to an upright from circular motion.

### To Keep up Sash Windows.

This is performed by means of a cork, in the simplest manner and with scarcely any expense. Bore three or four holes in the sides of a sash, in which insert common bottle corks, projecting about the sixteenth part of an inch. These will press against the window frames along the usual groove and by their elasticity support the sash at any height which may be required. We like springs better.

### Iron Wire.

Thirty one pounds of Shropshire iron have been made into wire upwards of 111 miles in length; and so fine was the fabric, that a part of it was humorously converted, in lieu of the horse hair, into a barrister's wig. The process followed to effect this extraordinary tenuity, consists of heating the iron and passing it through rollers of eight inches diameter, going at the rate of 400 revolutions per minute, down to No. 4, on the wire guage. It is afterwards drawn cold, at Birmingham or elsewhere, down to the extent of 38 on the same guage, and so completed to the surprising length of 111 miles.

### To Frighten Musquitoes.

Attach a piece of flannel or sponge to a thread, made fast to the top of the bedstead; wet the flannel or sponge with camphorated spirits, and the musquitoes will leave the room.

### Old Musical Instruments Superseding the New.

Four Hungarian brothers have arrived in London, whose names are Weiss, Schwarttz, Zover, and Grunswag. Two of these extraordinary men are capable of imitating the horn the hautboy, the trumpet, the cornet-a-piston, the violin and the violoncello, with their lips alone. An English paper says, it is something perfectly marvellous to observe the glibness, the distinction of intonation, the volume and the delicacy with which these Hungarian minstrels execute quartettes and trios.

### Receipt for Making Biscuit.

One quart of milk, four even teaspoonfuls of cream of tartar, to even teaspoonfuls of carbonate of soda,—the soda to be dissolved in the milk, and the cream of tartar to be thoroughly mixed dry with the flour, and a little salt. Mix it as soft as it can conveniently be baked. In this way you have biscuit mixed and ready for the table in half an hour.

### To Cure Warts.

Dissolve as much common washing soda as the water will take up—then wash the hands or warts with this for a minute or two, and allow them to dry without being wiped. This repeated will gradually destroy the most irritable wart.

### Composition Buildings.

At Southport, Wisconsin, they mix up gravel from the Lake shore, 15 parts to one of lime, and placing two planks edgewise, fill the space between about 12 inches in depth, and allow it to harden day by day in tiers. It is said to become a perfect stone wall.

THE NEW YORK
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